ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
Division of Air Pollution Control--Field Operations Section

MEMORANDU

DATE: November 14, 1988

Date of Inspection: September 21, 1988

TO: Miles Zamco

Last Insp. Date: August 26, 1988

FROM: Jeff Benbenek

Region/Distirct: 302

SUBJECT: Facility: Granite City Steel SIC 3312 I.D. #: 119 813 AAI

Address: 20th and State Streets, Granite City, IL 62040

Contact/Title: Connie Hickman/E.Q.C. Manager Phone: 618/451-4027

Facility Description

The subject facility is an integrated iron and steel mill. Its primary product is hot or cold rolled steel coils. For production of coke, two 45-oven batteries (A & B) are utilized, which are each rated at 1160 tons (dry basis) of coal per day for coking. Organics driven from the coal during the coking process are collected and separated in a conventional by-products plant. Molten iron is produced by two blast furnaces. The A furnace has a maximum production rate of 2400 tons/day, while the B furnace maximum production rate is 2800 tons/day. Steel is produced by two basic oxygen furnaces, nos. 1 & 2, with a combined maximum production rate of 6900 net tons per day. Molten steel produced at the basic oxygen furnace shop is either sent to the continuous caster to be directly cast into slabs or is poured into molds for production of ingots. The ingots, subsequently have to be reheated at the soaking pits before they are rolled into slabs. According to the type of sheet steel desired, the slabs are finished in the various operations in the steel milling area. There is a sinter plant on site at the facility, however, it has not been operated for several years. Steam for process and heating requirements is provided by 12 boilers in the blast furnace area (two rated at 225 mmBtu/hr. and 10 rated at 60 mmBtu/hr.) and 4 boilers in the steel mill area rated at 150 mmBtu/hr. Fuels utilized at the facility for the coke ovens, reheat furnaces, soaking pits, boilers, and various small fuel combustion sources are blast furnace gas, coke oven gas, natural gas, and #6 fuel oil. The combination and type of fuels utilized at each depend on location and availability.

Findings

The purpose of the plant visit was to inspect the Basic Oxygen Furnace Shop and Continuous Caster. I was accompanied by Connie Hickman of the E.Q.C. Dept. during the inspection. The total time of the plant visit was from 0950 hours - 1135 hours.

We first went to the continuous caster area. Slab ripping was in operation along with its associated baghouse. Ductwork leading to the baghouse was in good condition. Collected material was enclosed. However, I noted that several portions of the ductwork in under the slab ripping stations was disconnected or ajar, indicating an apparent violation of Section 9(b) of the Act for lack of maintenance. Stack emissions were negligible. The emissions that were escaping to the roof monitor were very slight and were not visible by the time they left the building via the monitor.

The ladle metallurgical station baghouse was in operation. No visible emissions were observed from its exhaust stacks. Collected dust was enclosed. Ductwork was in good condition along with the hooding over the station.

Argon stirring was not taking place at the time of the visit and, therefore, the baghouse was not in operation. Its ductwork was in good condition, however.

The roof monitor of the caster building was not exhibiting any visible fugitive emissions. The caster exhaust stack had a condensed water vapor plume with no visible emissions after dissipation.

We next proceeded to the Basic Oxygen Furnace Shop. I had noted heavy red visible emissions from the BOF electrostatic precipitator stack as I drove by that area prior to my arrival at the facility. With that in mind, I checked the opacity monitor in the pulpit first. It had recorded three six-minute averages above 30% prior to my arrival. There were several peaks over 60%.

The control panel indicated that all of the ESP's T-R sets were in operation along with all three of the exhaust fans. I noted that several of the monitors on the board had been or were in the process of being modernized.

We then went to the charge floor. I noted that the charging hoods on both vessels were in very good condition. A hot metal charge was observed on Vessel #2 at 1118 hours. Capture was very good and the length of the charge was 4 min. - 21 sec. The oxygen blow began at 1124 hours. After the blow began, I checked the stack gas flow rate. According to the monitor, the rate was 651,000 cfm. I had been informed that "A" section of the ESP was out of operation for rebuild of collector plates and electrodes. Therefore, the operation of the ESP at that rate is also an apparent violation of Section 9(b) of the Act, since special condition #5 of Operating Permit #72080043 limits the rate to 550,000 cfm if one passageway is dampered off. Waste gas suction was at 2.6" of water and clean gas suction was at 4". Spray water flow was at 860 gpm.

I recorded the following electrical readings from the ESP control room:

ESP #1

	Field #1	Field #2	Field #3	Field #4
Primary Current (A.C. amps)	245	150	135	65
Primary Volts (A.C.)	250	225	220	205
Sec. Current (D.C. milliamps)	1030	100	605	340

ESP #2

	Field #1	Field #2	Field #3	Field #4
Primary Current (A.C. amps)	60	140	180	200
Primary Volts (A.C.)	360	295	250	260
Sec. Current (D.C. milliamps)	300	505	790	900

ESP #3

	Field #1	Field #2	Field #3	Field #4
Primary Current (A.C. amps)	35	60	90	130
Primary Volts (A.C.)	190	260	270	325
Sec. Current (D.C. milliamps)	200	80	400	700

Prior to going back to the pulpit, we went to the reladling station baghouse. Pressure drops across the unit's compartments were ranging from 4 to 5 inches of water. Fan speeds were normal. Collected dust was enclosed and all ductwork was in good condition. Capture was very good at the reladling station and at the internal desulfurization stations. No visible emissions were noted from the baghouse vents.

Back at the pulpit, I noted that the stack gas flowrate remained approximately the same during the heat. Stack gas temperature peaked at 450°F and waste gas temperature peaked at 550°F. The opacity monitor peaked at 71% at the beginning of the blow. The heat, #286968, consisted of 335,000 lbs. of hot metal, 165,000 lbs. of scrap, and 32,000 lbs. of flux. The oxygen blow was 20 min. in length.

I, again, observed a hot metal charge on Vessel #2 at 1206 hours. It was 4 min. - 53 sec. in length and capture of charging emissions was excellent. The oxygen blow began at 1213 hours. The stack gas flowrate, again, was well over 550,000 cfm and at 670,000 cfm. Steam flow was 24,000 lbs/hr. The opacity monitor peaked at 46% at the onset of the blow.

I next checked the condition of the ductwork at the top of the BOF Shop. Both secondary and primary ductwork was in good condition. Repairs have been made to the primary ductwork, where it vertically extends out of the Shop prior to connection to the horizontal main. While in this area, I observed heavy visible emissions from the ESP stack which were light red in color. I also observed that the bin floor baghouse stack had no visible emissions from its exhaust. The unit was in operation and its hooding and ductwork were in good condition.

Back at the pulpit, the opacity monitor had shown a peak of 84% and there were two six-minute averages of 38% and 56%, respectively, during the heat. The stack gas flowrate remained over 600,000 cfm during the heat. Stack gas temperatures were approximately the same as previously recorded. The heat, #286969, consisted of 335,000 lbs. of hot metal, 165,000 lbs. of scrap, and 35,000 lbs. of fluxes. The oxygen blow was 20 min. in length.

At that point, I decided to conduct opacity readings of the visible emissions of the ESP stack. After a break for lunch, I met Tom Wahl of the E.Q.C. Dept. and we proceeded to an acceptable location for conducting the readings.

A copy of the visible emissions recording form is attached to this memo. As is shown, 74 readings were above 60% with a reading of 95% being the maximum. This is an apparent violation of 35 Ill. Adm. Code 212.123 of the Regulations.

After completion of the above, Mr. Wahl and myself went back to the pulpit. Two heats had taken place during the time of the readings. As was before, the stack gas exhaust flowrate remained over 600,000 cfm. The steam injection was the same as before. Waste gas temperatures were 560°F and 590°F respectively for the two heats. I noted that the opacity monitor had six-minute averages of 90% and 73% during the periods that my opacity readings were at their highest.

The two heats, #286970 and #286971, both had 20 min. oxygen blow times, with no reblows. Hot metal used was 340,000 lbs. and 335,000 lbs., respectively. Scrap used was 160,000 lbs. and 165,000 lbs. And fluxes used were 38,000 lbs. and 29,000 lbs.

It did not appear to me that there were any actions being taken to reduce the heavy stack emissions. Oxygen blow times were the same as normal and, again, the flowrate of the stack exhaust was above that limited by the Operating Permit.

A 31(d) Compliance Inquiry Letter was sent to the facility on October 17, 1988, for the above-noted apparent violations.

JJB:pbo/0266A

cc: DAPC Collinsville

Attachment

ILLINOIS EPA

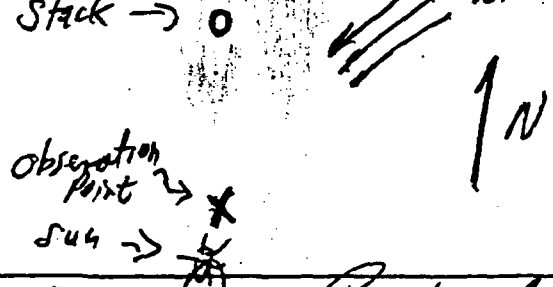
Environmental Protection Age

2200 Churchill Road, Springfield, Illinois 627

VISIBLE EMISSION RECORDING FORM

Company Name: Granite City Steel	Company ID Number: 11983AAI
Address: 20th & State Streets Granite City	Observer's Name: Jeff Berkenic
State: IL ZIP: 62040 Phone: 618 451-3456	Certified By: State of Illinois Date: 04/26/80
Source/Process: Basic Oxygen Furnace Shop	Time Start: 1342 Time Stop
Control Equipment: ESP / Operating Mode: Steelmaking	
Describe Emission Point: ESP Stack	
Emission Point Height Above Ground Level: 160 ft. / Emission Point Height Relative to Observer: Level.	
Distance to Emission Point: 500ft. / Direction to Emission From Observer: North	
Describe Emission	
Color of Emission: Light Red / Continuous Fugitive Intermittent	
Water Vapor Present: No X Yes ___ / If Yes, Is Plume: Attached ___ Detached ___	
Point Where Opacity Was Determined: Just above stack outlet	
Describe Background	
Color of Background: Sky blue / Sky Condition: Clear	
Wind Speed: 5-10mph / Wind Direction: East-Northeast	
Ambient Temperature: 75°F / Relative Humidity	

Layout Sketch of Source
(Show North Arrow, Location of Sun, Emission Point, Wind Direction, etc.)



Time	0	15	30	45		0	15	30
0	10	25	40	55	30	0	0	0
1	25	45	40	45	31	0	0	0
2	45	35	30	25	32	5	5	0
3	25	30	35	35	33	0	0	0
4	30	50	55	55	34	5	5	5
5	40	40	40	35	35	20	20	20
6	50	65	55	60	36	15	10	10
7	75	70	70	65	37	5	5	5
8	65	65	65	65	38	5	5	0
9	70	70	65	65	39	5	5	10
10	70	65	65	70	40	10	10	10
11	70	70	70	70	41	15	15	20
12	65	65	65	65	42	25	20	15
13	65	60	65	70	43	20	30	20
14	65	70	65	70	44	20	20	20
15	65	70	70	65	45	30	25	25
16	65	60	65	65	46	30	30	30
17	75	75	75	75	47	40	45	45
18	55	55	40	45	48	70	60	60
19	45	45	20	10	49	75	65	60
20	20	5	10	5	50	80	85	75
21	0	0	0	0	51	85	85	85
22	5	10	10	5	52	85	85	85
23	0	0	0	0	53	80	80	80
24	0	0	0	0	54	*	*	*
25	0	0	0	5	55	*	*	*
26	5	5	0	0	56	60	55	55
27	5	0	0	0	57	65	65	60
28	0	0	0	0	58	60	60	60
29	10	0	0	0	59	20	25	25

Range of Opacity: 0 % to 85 % Number of Readings: 60 % were 74

Comments: * - Readings were obscured by fugitive emissions from BOF roof monitor. Continued on next page as opacity readings lasted >1

Observer's Signature: Jeff Berkenic Date: 09/21/80

APC 190 REV. 10/80